

CLAIMS

1. An alkaline earth metal-containing MFI zeolite catalyst for use in synthesizing a lower hydrocarbon from dimethyl ether and/or methanol, comprising a Si/Al atomic ratio
5 ranging from 30 to 400, an alkaline earth metal/Al atomic ratio ranging from 0.75 to 15, and an average particle diameter ranging from 0.05 to 2 μm .
2. The alkaline earth metal-containing MFI zeolite catalyst as set forth in claim 1, wherein said alkaline earth metal-containing MFI zeolite catalyst is a proton type.
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3. A process for preparing an alkaline earth metal-containing MFI zeolite catalyst for use in synthesizing a lower hydrocarbon from dimethyl ether and/or methanol, comprising synthesizing a zeolite raw material solution which contains a SiO_2 source, a metal oxide source, an alkaline source, and a structure directing agent, in the presence of
15 an alkaline earth metal salt and a zeolite seed crystal.
4. The process for preparing an alkaline earth metal-containing MFI zeolite catalyst as set forth in claim 3, wherein the amount of said zeolite seed crystal added ranges from 1 to 60 mass% of the amount of an alkaline earth metal-containing MFI zeolite catalyst
20 which is synthesized without adding said zeolite seed crystal.
5. The process for preparing an alkaline earth metal-containing MFI zeolite catalyst as set forth in claim 3, wherein said zeolite seed crystal has a MFI structure.
- 25 6. A process for producing a lower hydrocarbon comprising synthesizing a lower

hydrocarbon from dimethyl ether and/or methanol,

wherein said alkaline earth metal-containing MFI zeolite catalyst as set forth in claim 1 is employed,

said lower hydrocarbon is an unsaturated hydrocarbon having 2 to 4 carbon atoms, and

- 5 the yield of the carbon atoms contained in said lower hydrocarbon to the carbon atoms contained in said supplied dimethylether and/or said methanol is not less than 60% by weight.